

WHAT IS CLAIMED IS:

1 . An imaging apparatus for taking image, said imaging apparatus comprising:

an optical finder for visually confirming the image to be taken;

a variable configuration mirror having a reflecting surface variable in configuration upon a conduction of electricity for performing an optical adjustment of said optical finder based on change in the configuration of the reflecting surface; and

a control section for effecting control so as to conduct electricity to said variable configuration mirror when an operation mode of said imaging apparatus is set to a specific mode.

2 . The imaging apparatus according to claim 1, wherein said control section effects control so as to conduct electricity to said variable configuration mirror in accordance with predetermined instructions when the operation mode of said imaging apparatus is set to an image taking mode.

3 . The imaging apparatus according to claim 1, wherein said control section effects control so as not to conduct

electricity to said variable configuration mirror when the operation mode of the imaging apparatus is set to a through image displaying mode for displaying a through image onto an image display section.

4 . The imaging apparatus according to claim 1, wherein said variable configuration mirror comprises a part of an optical system of said optical finder.

5 . The imaging apparatus according to claim 1, wherein said variable configuration mirror adjusts a variable power ratio of said optical finder.

6 . The imaging apparatus according to claim 1, wherein said variable configuration mirror adjusts a focal point of said optical finder.

7 . The imaging apparatus according to claim 1, wherein said variable configuration mirror adjusts a diopter of said optical finder.

8 . The imaging apparatus according to claim 1, wherein a plurality of units of said variable configuration mirror are provided to effect the optical adjustment of the optical finder.

9 .        A controlling method of imaging apparatus for taking image, said controlling method of imaging apparatus comprising a step of conducting electricity to a variable configuration mirror for performing an optical adjustment of an optical finder based on configuration change of a reflecting surface thereof due to conduction of electricity when an operation mode of the imaging apparatus is being set to a specific mode.

10.        An imaging apparatus comprising:  
          an image taking section for taking image;  
          a variable configuration mirror to be used for the image taking section having a reflecting surface variable in configuration upon a conduction of electricity for performing an optical adjustment of said image taking section by change in the configuration of the reflecting surface;  
          an optical finder for visually confirming the image to be taken;  
          a variable configuration mirror to be used for the optical finder having a reflecting surface variable in configuration upon a conduction of electricity for performing an optical adjustment of said optical finder by change in the configuration of the reflecting surface; and

a control section for effecting control so as to avoid a reciprocal overlap of timings at which electricity is conducted respectively to the variable configuration mirror to be used for said image taking section and to the variable configuration mirror to be used for said optical finder.

11. An imaging apparatus comprising:

an image taking section for taking image;

a variable configuration mirror to be used for the image taking section having a reflecting surface variable in configuration upon a conduction of electricity for performing an optical adjustment of said image taking section by change in the configuration of the reflecting surface;

an optical finder for visually confirming the image to be taken;

a variable configuration mirror to be used for the optical finder having a reflecting surface variable in configuration upon a conduction of electricity for performing an optical adjustment of said optical finder by change in the configuration of the reflecting surface; and

a control section for, in controlling the conduction of electricity to the variable configuration mirror for said image taking section and to the variable configuration

mirror for said optical finder, effecting control so as to avoid an overlap of the conduction of electricity for at least one variable configuration mirror of said variable configuration mirrors with the conduction of electricity for the other variable configuration mirror.

12. The imaging apparatus according to claim 11, wherein said control section effects control so that the conduction of electricity for each of all of said variable configuration mirrors does not overlap that for another.

13. A controlling method of imaging apparatus comprising a step of controlling a plurality of variable configuration mirrors that are variable configuration mirrors to be used for an image taking section for performing an optical adjustment of the image taking section by change in configuration of a reflecting surface caused by a conduction of electricity and variable configuration mirrors to be used for an optical finder for performing an optical adjustment of the optical finder by change in configuration of a reflecting surface caused by the conduction of electricity such that the conduction of electricity for at least one variable configuration mirror of the plurality of variable configuration mirrors does not overlap the conduction of electricity for the other configuration

mirrors.

14. . An imaging apparatus for taking image, said imaging apparatus comprising:

an optical finder for visually confirming the image to be taken;

a variable configuration mirror having a reflecting surface variable in configuration upon a conduction of electricity for performing an optical adjustment of said optical finder by change in the configuration of the reflecting surface; and

control means for effecting control so as to conduct electricity to said variable configuration mirror when an operation mode of said imaging apparatus is set to a specific mode.

15. An optical finder for visually confirming image to be taken, said optical finder comprising:

a plurality of variable configuration mirror having a reflecting surface variable in configuration upon a conduction of electricity for performing an optical adjustment by change in the configuration of the reflecting surface; and

a control section for controlling the conduction of electricity so that the periods during which electricity is

conducted respectively to the plurality of variable configuration mirrors do not overlap each other.

16. An optical finder for visually confirming an image to be taken, said optical finder comprising:

a variable configuration mirror to be used for the optical finder constituting a part of an optical system of the optical finder and having a reflecting surface variable in configuration upon a conduction of electricity for performing an optical adjustment by change in the configuration of the reflecting surface; and

a control section for controlling the conduction of electricity so as to retain the configuration of the reflecting surface to be changed in configuration upon the conduction of electricity of the variable configuration mirror to a predetermined configuration within a permissible range.

17. The optical finder according to claim 16, wherein said control section effects control so as to conduct electricity to said variable configuration mirror at predetermined intervals to retain the configuration of the reflecting surface to a predetermined configuration within a permissible range.

18. The optical finder according to claim 16 comprising a plurality of said variable configuration mirror, wherein said control section controls the conduction of electricity so that the periods during which electricity is conducted respectively to the plurality of said variable configuration mirrors do not overlap each other.

19. An imaging apparatus comprising:  
an image taking section for taking image;  
a variable configuration mirror to be used for the image taking section having a reflecting surface variable in configuration upon a conduction of electricity for performing an optical adjustment of said image taking section by change in the configuration of the reflecting surface;  
an optical finder for visually confirming the image to be taken;  
a variable configuration mirror to be used for the optical finder having a reflecting surface variable in configuration upon a conduction of electricity for performing an optical adjustment of said optical finder by change in the configuration of the reflecting surface; and  
a control section for controlling the conduction of electricity to the variable configuration mirror to be used for said image taking section and to the variable



configuration mirror to be used for the optical finder;

wherein the control section effects control so that an intermittent conduction of electricity for retaining the configuration of the reflecting surface of said variable configuration mirrors to a predetermined configuration within a permissible range is repeated in such a manner that an intermittent cycle for the variable configuration mirror to be used for said image taking section is shorter as compared to that for the variable configuration mirror to be used for said optical finder.

20. An imaging apparatus comprising:

image taking means for taking image;

a variable configuration mirror to be used for the image taking means having a reflecting surface variable in configuration upon a conduction of electricity for performing an optical adjustment of said image taking means by change in the configuration of the reflecting surface;

an optical finder for visually confirming image to be taken;

a variable configuration mirror to be used for the optical finder having a reflecting surface variable in configuration upon a conduction of electricity for performing an optical adjustment of said optical finder by change in the configuration of the reflecting surface; and

control means for controlling the conduction of electricity to the variable configuration mirror to be used for said image taking means and to the variable configuration mirror to be used for the optical finder;

wherein the control means effects control so that an intermittent conduction of electricity for retaining the configuration of the reflecting surface of said variable configuration mirrors to a predetermined configuration within a permissible range is repeated in such a manner that an intermittent cycle for the variable configuration mirror to be used for said image taking means is shorter as compared to that for the variable configuration mirror to be used for said optical finder.

21. An imaging apparatus comprising:

an image taking section having a variable power section;

a variable power instructing section for giving an instruction for change in variable magnification to said variable power section;

an optical finder for visually confirming an image to be taken;

a variable configuration mirror to be used for the optical finder having a reflecting surface variable in configuration upon a conduction of electricity for

performing a variable power adjustment by change in the configuration of the reflecting surface; and

a control section for controlling a variable magnification of the variable configuration mirror to be used for said optical finder in accordance with an instruction of said variable power instructing section.

22. The imaging apparatus according to claim 21, wherein the variable power section of said image taking section has an optical variable power section and an electronic variable power section and a maximum variable magnification of the variable configuration mirror to be used for said optical finder is set equal to a maximum variable magnification of the image taking section obtained by combining said electronic variable power section to said optical variable power section.

23. The imaging apparatus according to claim 21, wherein the variable power section of said image taking section has an optical variable power section and an electronic variable power section and said control section controls a variable magnification of the variable configuration mirror to be used for said optical finder in accordance with a variable magnification obtained by totaling the respective variable magnifications of said optical variable power

section and said electronic variable power section.

24. The imaging apparatus according to claim 21, wherein the variable power section of said image taking section has a variable configuration mirror having a reflecting surface variable in configuration upon a conduction of electricity so as to perform a variable power adjustment by change in the configuration of said reflecting surface of the variable configuration mirror.

25. A controlling method of imaging apparatus including an image taking section having an optical variable power section and an electronic variable power section and an optical finder for visually confirming image to be taken, said controlling method of imaging apparatus comprising the steps of:

controlling the variable power of said image taking section by combining said optical variable power section and said electronic variable power section in accordance with an instruction of change in a variable magnification to said image taking section; and

controlling, in accordance with said combined variable magnification of the image taking section, a variable magnification of a variable configuration mirror provided in said optical finder having a reflecting surface

variable in configuration upon a conduction of electricity for performing a variable power adjustment by change in the configuration of the reflecting surface.

26. An imaging apparatus comprising:

an image taking section for taking image;

a taking system optical variable power section for adjusting variable magnification of a image to be taken by movement of at least one lens along an optical axis thereof;

an optical finder for visually confirming the image to be taken; and

a finder variable power section for changing a magnification of said image to be visually confirmed, formed as a combination of two variable power adjusting sections that are a lens variable power adjusting section based on movement of a lens along the optical axis thereof and a mirror variable power adjusting section based on change in configuration of a reflecting surface of a variable configuration mirror having said reflecting surface variable in configuration upon a conduction of electricity;

wherein a maximum variable magnification of said taking system optical variable power section is set equal to a maximum variable magnification of the lens variable power adjusting section of said finder variable power section.

27. The imaging apparatus according to claim 26 further comprising an electronic variable power section which electronically changes a magnification of the image to be taken and of which a maximum variable magnification is set equal to a maximum variable magnification of said mirror variable power adjusting section.

28. An imaging apparatus comprising:  
an image taking section for taking image;  
a taking system optical variable power section for changing a magnification of said image to be taken, formed as a combination of two variable power adjusting sections that are a lens variable power adjusting section based on movement of a lens along an optical axis thereof and a mirror variable power adjusting section based on change in configuration of a reflecting surface of a variable configuration mirror having said reflecting surface variable in configuration upon a conduction of electricity;

an optical finder for visually confirming image to be taken; and

a finder variable power section for changing a magnification of said image to be visually confirmed, formed as a combination of two variable power adjusting sections that are a lens variable power adjusting section

based on movement of a lens along an optical axis thereof and a mirror variable power adjusting section based on change in configuration of a reflecting surface of a variable configuration mirror having said reflecting surface variable in configuration upon a conduction of electricity,

wherein a maximum variable magnifications of the respective lens variable power adjusting sections of said taking system optical variable power section and said finder variable power section are set to be equal to each other.

29. An imaging apparatus comprising:

an image taking section for taking image;

a taking system optical variable power section for changing a magnification of said image to be taken, formed as a combination of two variable power adjusting sections that are a lens variable power adjusting section based on movement of a lens along an optical axis thereof and a mirror variable power adjusting section based on change in configuration of a reflecting surface of a variable configuration mirror having said reflecting surface variable in configuration upon a conduction of electricity;

an optical finder for visually confirming the image to be taken; and

a finder variable power section for changing a magnification of said image to be visually confirmed, formed as a combination of two variable power adjusting sections that are a lens variable power adjusting section based on movement of a lens along an optical axis thereof and a mirror variable power adjusting section based on change in configuration of a reflecting surface of a variable configuration mirror having said reflecting surface variable in configuration upon a conduction of electricity;

wherein a maximum variable magnifications of the respective mirror variable power adjusting sections of said taking system optical variable power section and said finder variable power section are set to be equal to each other.

30. An imaging apparatus comprising:

an image taking section for taking image;

a focus detecting section for effecting focus detection;

a taking focus section for adjusting a focal point of said image taking section;

an optical finder for visually confirming the image to be taken;

a variable configuration mirror having a reflecting



surface variable in configuration upon a conduction of electricity for adjusting a focal point of said optical finder by change in the configuration of the reflecting surface; and

a control section for controlling the taking focus section and the variable configuration mirror based on an outcome of said focus detection.

31. The imaging apparatus according to claim 30, wherein said control section controls said variable configuration mirror so as to additionally effect a variable power adjustment of said optical finder.

32. The imaging apparatus according to claim 30, wherein said taking focus section has a variable configuration mirror having a reflecting surface variable in configuration upon conduction of electricity so as to adjust the focal point by change in the configuration of said reflecting surface of the variable configuration mirror.

33. The imaging apparatus according to claim 32 further comprising an image display section for electrically displaying the image to be taken, wherein, if a through image is being displayed on said image display section, said control section effects control so as to adjust the

focal point only of the variable configuration mirror of said taking focus section and does not effect a focal point adjustment of the variable configuration mirror of said optical finder.

34. The imaging apparatus according to claim 33, wherein said focus detecting section detects focus by a contrast detection method, and said control section, during the focus detection by said focus detecting section, effects control so as to change the focal point adjustment of said taking focus section in connection with the focus detection and to cause the operation of the variable configuration mirror of said optical finder to be interrupted.

35. An imaging apparatus comprising:  
image taking means for taking image;  
focus detecting means for effecting focus detection;

taking focus means for adjusting a focal point of said image taking means;

an optical finder for visually confirming the image to be taken;

a variable configuration mirror having a reflecting surface variable in configuration upon a conduction of electricity for adjusting a focal point of said optical

finder by change in the configuration of the reflecting surface; and

control means for controlling the taking focus means and the variable configuration mirror based on an outcome of said focus detection.

36. An imaging apparatus comprising:

an image taking section for taking image;

a finder for visually confirming the image to be taken;

a variable configuration mirror having a reflecting surface variable in configuration upon a conduction of electricity capable of adjusting diopter of said finder by change in the configuration of the reflecting surface;

a storage section for storing an information relating to the configuration of said variable configuration mirror corresponding to said diopter adjustment; and

a control section for controlling said variable configuration mirror to a predetermined configuration in accordance with said stored information.

37. The imaging apparatus according to claim 36, wherein said storage section stores information relating to a plurality of configurations as the information relating to

the configuration of said variable configuration mirror.

38. The imaging apparatus according to claim 36, wherein said control section controls said variable configuration mirror to a predetermined configuration based on the stored information in accordance with a turning ON of a power supply of the imaging apparatus.

39. The imaging apparatus according to claim 36, wherein said control section controls said variable configuration mirror to a predetermined configuration based on the stored information when the imaging apparatus is in a mode capable of taking image.

40. The imaging apparatus according to claim 36, wherein a diopter condition of said finder is brought to a standard diopter condition by the reflecting surface configuration of said variable configuration mirror in a condition where electricity is not conducted.

41. The imaging apparatus according to claim 36, wherein said finder comprises an optical finder.

42. The imaging apparatus according to claim 41, wherein said variable configuration mirror, at the same time of

diopter adjustment, adjusts a focal point of said finder in accordance with a focal point adjustment of an image taking optical system provided at said image taking section.

43. The imaging apparatus according to claim 41, wherein said finder has a plurality of variable configuration mirrors so that a variable power adjustment of said finder can be effected in accordance with a variable power adjustment of an image taking optical system provided at said image taking section.

44. The imaging apparatus according to claim 42, wherein said finder has a plurality of variable configuration mirrors so that a variable power adjustment of said finder can be effected in accordance with a variable power adjustment of an image taking optical system provided at said image taking section.

45. The imaging apparatus according to claim 43, wherein the mirror configurations of said plurality of variable configuration mirrors are respectively adjusted toward opposite direction from each other into a concave or into a convex.

46. The imaging apparatus according to claim 44, wherein

the mirror configurations of said plurality of variable configuration mirrors are respectively adjusted toward opposite direction from each other into a concave or into a convex.

47. An imaging apparatus comprising:  
an image taking means for taking image;  
a finder for visually confirming image to be taken;  
a variable configuration mirror having a reflecting surface variable in configuration upon a conduction of electricity capable of a diopter adjustment of said finder by change in the configuration of the reflecting surface;  
storage means for storing information relating to the configuration of said variable configuration mirror corresponding to said diopter adjustment; and  
control means for controlling said variable configuration mirror to a predetermined configuration in accordance with said stored information.

48. A finder for visually confirming image, said finder comprising:

a variable configuration mirror having a reflecting surface variable in configuration upon a conduction of electricity capable of a diopter adjustment of said finder by change in the configuration of the reflecting surface;

a storage section for storing an information relating to the configuration of said variable configuration mirror corresponding to said diopter adjustment; and

a control section for controlling said variable configuration mirror to a predetermined configuration in accordance with said stored information.

49. A finder for visually confirming image, said finder comprising a variable configuration mirror having a reflecting surface variable in configuration upon a conduction of electricity capable of a diopter adjustment of said finder by change in the configuration of said reflecting surface, wherein the diopter condition of said finder is brought to a standard diopter condition by the reflecting surface configuration of said variable configuration mirror in a condition where electricity is not conducted.

50. An imaging apparatus comprising:  
an image taking section for taking image;  
a finder for visually confirming image to be taken;  
a variable configuration mirror having a reflecting surface variable in configuration upon a conduction of electricity capable of a diopter adjustment of said finder

by change in the configuration of the reflecting surface;  
and

a control section for causing the configuration of  
the variable configuration mirror to be changed;

wherein the control section, when use of said finder  
is to be avoided, controls said variable configuration  
mirror so as to attain an unsuitable diopter thereof that is  
different from the diopter at the time of using the finder.

51. The imaging apparatus according to claim 50, wherein  
said control section effects control so as to result in  
said unsuitable diopter when an object distance in image  
taking is short.

52. The imaging apparatus according to claim 50, wherein  
said control section effects control so as to result in  
said unsuitable diopter at the time of taking an image by  
using an electronic zoom section.

53. An optical apparatus comprising:

a plurality of variable configuration mirror having  
a reflecting surface variable upon a conduction of  
electricity for performing an optical adjustment by change  
in the configuration of the reflecting surface; and

a control section for controlling the conduction of



electricity so that the periods during which electricity is conducted respectively to the plurality of variable configuration mirrors do not overlap each other.

54. The optical apparatus according to claim 53, wherein the optical apparatus comprises an imaging apparatus for taking an image of object.

55. The optical apparatus according to claim 53, wherein the optical apparatus comprises an observing apparatus for observing a subject.

56. The optical apparatus according to claim 53, wherein the optical apparatus comprises an image forming apparatus for forming an object image.

57. An optical apparatus comprising:

a lens variable power adjusting section for adjusting a magnification of an image to be formed by moving a lens or lens group; and

a mirror variable power adjusting section for adjusting a magnification by a configuration of a reflecting surface of a variable configuration mirror having the reflecting surface variable in the configuration upon a conduction of electricity.

58. The optical apparatus according to claim 57, wherein the optical apparatus comprises an imaging apparatus for taking an image of object.

59. The optical apparatus according to claim 57, wherein the optical apparatus comprises an observing apparatus for observing a subject.

60. The optical apparatus according to claim 57, wherein the optical apparatus comprises an image forming apparatus for forming an object image.